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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/636,030	08/07/2003	Young-Min Kwon	20067/OPP030888US	1035

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EXAMINER

HOANG, QUOC DINH

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 04/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/636,030	Applicant(s) KWON, YOUNG-MIN	
	Examiner Quoc D Hoang	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☒ Claim(s) 7-11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/03</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Amendment

1. Amendment filed on 03/08/2004 has been entered and made of record as Paper No. 0304. In Amendment, claims 12-20 have been canceled. Claims 1-11 are pending in the application.

Information Disclosure Statement

2. The information disclosure statement (IDS) filed on 11/24/2003 and made record as Paper No. 11/2003. The references cited on the PTOL 1449 form have been considered.

Drawings

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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5. Claims 1-5 are rejected under 35 U.S. C. 102(e) as being anticipated by Yin et al., U.S. Pat No. 6,586,820 ("Yin").

Regarding claim 1, Yin teaches a fabricating method of a semiconductor device comprising: (a) forming a film 2 which to form a pattern on a structure of a semiconductor substrate 1 (col. 8, lines 6-40 and Fig. 5), (b) forming an anti-reflection layer 7 on the film 2 to form a stacking structure including the film 2 and the anti-reflection layer 7 (col. 8, lines 6-40 and Fig. 5); (c) performing a plasma treatment on an upper surface of the stacking structure (col. 8, lines 58-67 and Fig. 6); (d) forming a photoresist pattern 3 on the stacking structure (col. 9, lines 50-67 and Fig. 7), and e) etching the stacking structure using the photoresist pattern as a mask to form a stacking structure pattern (col. 10, lines 30-67 and Fig. 9). Though Yin does not teach forming a groove on the upper surface of the stacking structure after plasma treating the surface of the stacking structure, it is understood that this is an inherent characteristic of the materials. As shown in column 9, lines 1-15, Yin teaches plasma treating the ARC layer with N_2O in 10-30 seconds and will therefore necessarily form a groove on the upper surface of the ARC layer.

Regarding claim 2, Yin teaches wherein performing the plasma treatment includes performing the plasma treatment for 15-30 seconds using N_2O plasma (col. 9, lines 1-15).

Regarding claims 3-4, Yin teaches wherein forming the photoresist pattern includes applying a photoresist layer 3, exposing the photoresist layer 3 to a light

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selectively, and developing the photoresist layer 3 to form the photoresist pattern exposing a part of the stacking structure (col. 10, lines 1-30 and Fig. 8).

Regarding claim 5, Yin teaches wherein a SiOxNy layer 7 having thickness of 200-300 Å is used as the anti-reflection layer (col. 8, lines 6-40).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yin et al., U.S. Pat No. 6,586,820 as applied to claims 1-5 above, and further in view of Applicant's Prior Art.

Yin does not disclose wherein the film is a metal film.

Applicant's Prior Art teaches in [0006] and Figure 1, the film 1 is a metal film. Therefore, it would be obvious to one with ordinary skill in the art at the time of the invention to modify Yin's film 2 by using a metal film taught by Applicant's Prior Art so that the metal film could be used such as metal traces in semiconductor integrated circuits.

Allowable Subject Matter

8. Claims 7-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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9. The following is a statement of reasons for the indication of allowable subject matter: Claim 7 recite, inter alia, a method wherein forming the antireflection layer includes forming a protective oxide layer on the antireflection layer. The art of record does not disclose or anticipate the limitation in combination with other claim element nor would it be obvious to modify the art of record so as to form a device including the above limitation.

10 Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quoc Hoang whose telephone number is (571) 272-1780. The examiner can normally be reached on Monday-Friday from 8.00 AM to 5.00 PM.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone numbers of the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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Quoc Hoang *hy*
Patent examiner/AU 2818


David Nelms
Supervisory Patent Examiner
Technology Center 2800